

Pantheon Report

Generated at 2018-08-28 05:03:05 (UTC).

Data path: AWS Brazil 2 on `ens5` (*local*) → Colombia on `p4p1` (*remote*).

Repeated the test of 4 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

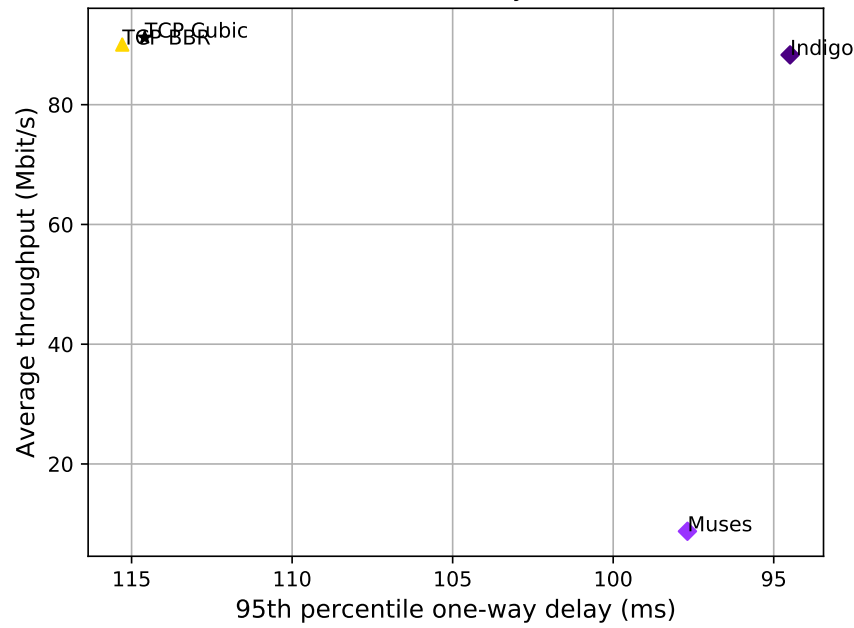
System info:

```
Linux 4.15.0-1019-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

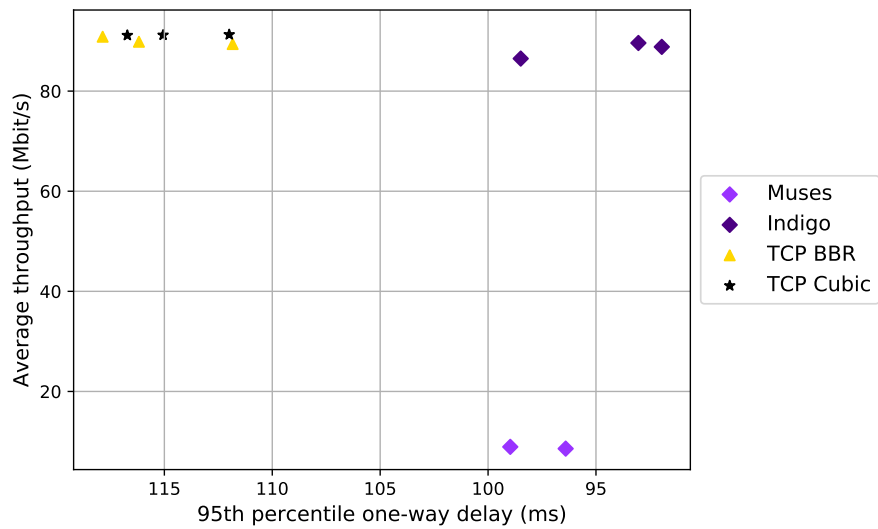
Git summary:

```
branch: muses @ 86ef433b09b2f4ecae1186d6940af93bcf0969cd
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b261c9e99c63be452bc16f94ce0caa99a4c9d39a
third_party/pantheon-tunnel @ cbfce6db5ff5740dafa1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from AWS Brazil 2 to Colombia, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS Brazil 2 to Colombia, 3 runs of 30s each per scheme



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	90.04	115.29	3.56
TCP Cubic	3	91.20	114.59	0.44
Indigo	3	88.32	94.49	1.52
Muses	2	8.75	97.69	65.00

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 04:49:26

End at: 2018-08-28 04:49:56

Local clock offset: 9.062 ms

Remote clock offset: 8.857 ms

Below is generated by plot.py at 2018-08-28 05:02:58

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.86 Mbit/s

95th percentile per-packet one-way delay: 116.178 ms

Loss rate: 3.54%

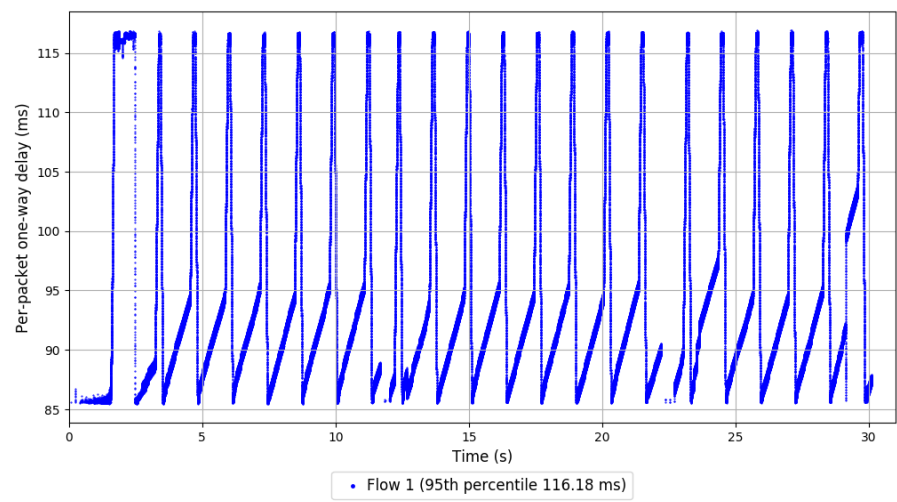
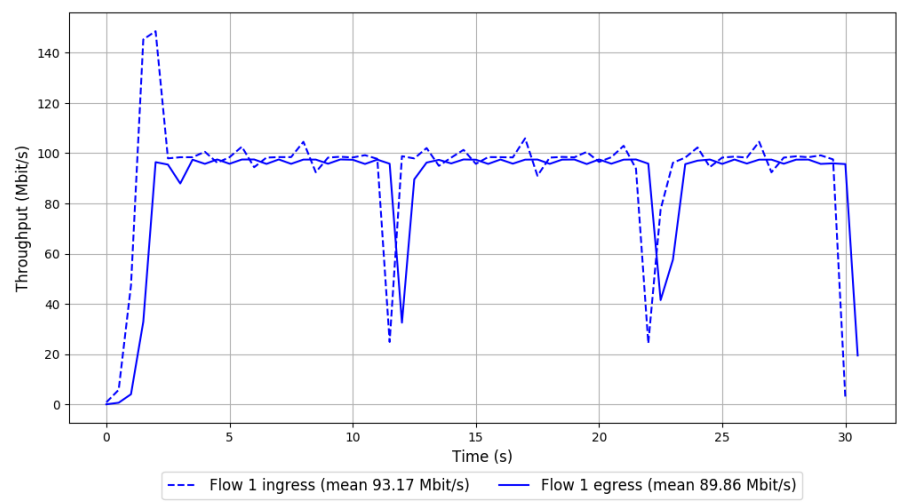
-- Flow 1:

Average throughput: 89.86 Mbit/s

95th percentile per-packet one-way delay: 116.178 ms

Loss rate: 3.54%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-08-28 04:54:06

End at: 2018-08-28 04:54:36

Local clock offset: 9.86 ms

Remote clock offset: 4.733 ms

Below is generated by plot.py at 2018-08-28 05:02:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 90.87 Mbit/s

95th percentile per-packet one-way delay: 117.859 ms

Loss rate: 3.51%

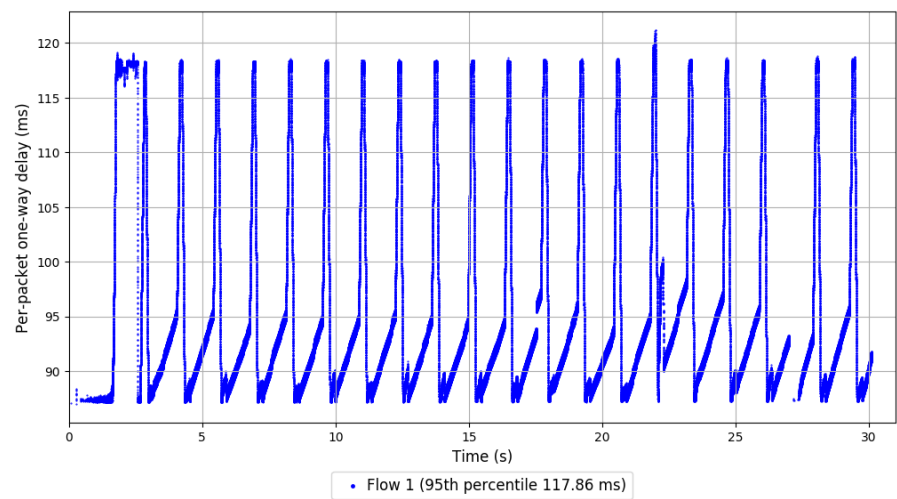
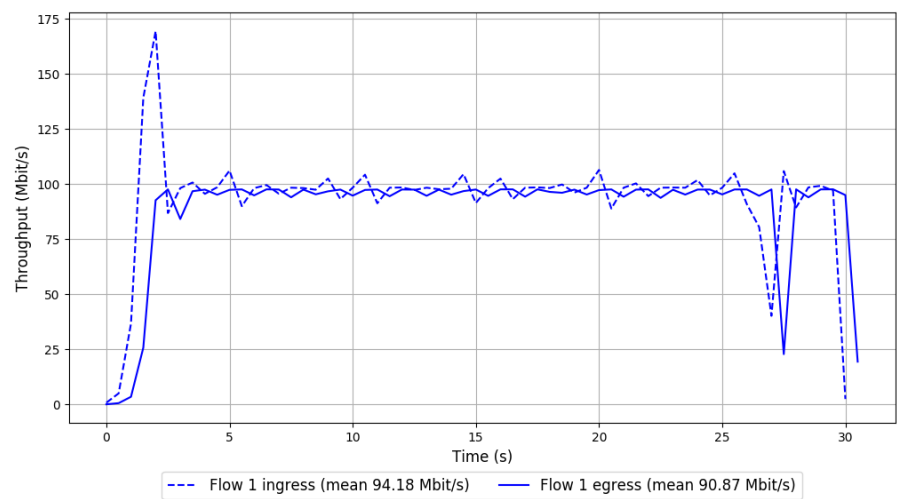
-- Flow 1:

Average throughput: 90.87 Mbit/s

95th percentile per-packet one-way delay: 117.859 ms

Loss rate: 3.51%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-08-28 04:58:47

End at: 2018-08-28 04:59:17

Local clock offset: 11.432 ms

Remote clock offset: 4.46 ms

Below is generated by plot.py at 2018-08-28 05:02:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.40 Mbit/s

95th percentile per-packet one-way delay: 111.835 ms

Loss rate: 3.62%

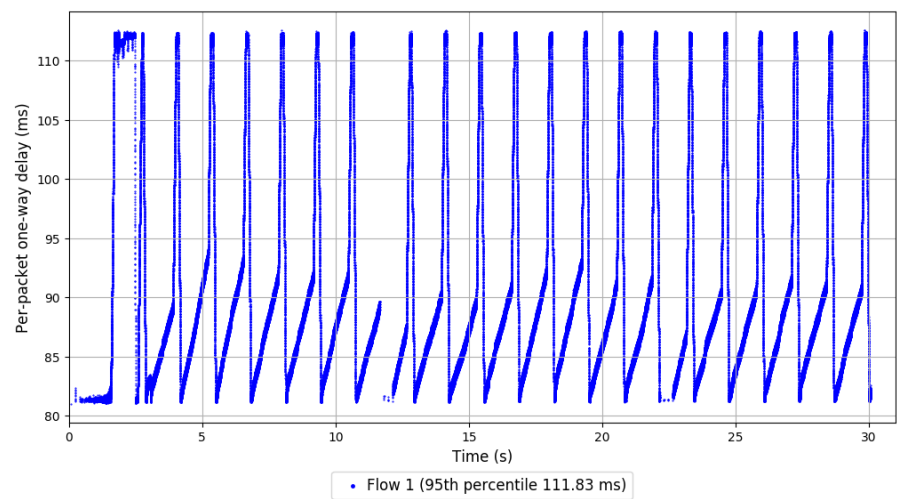
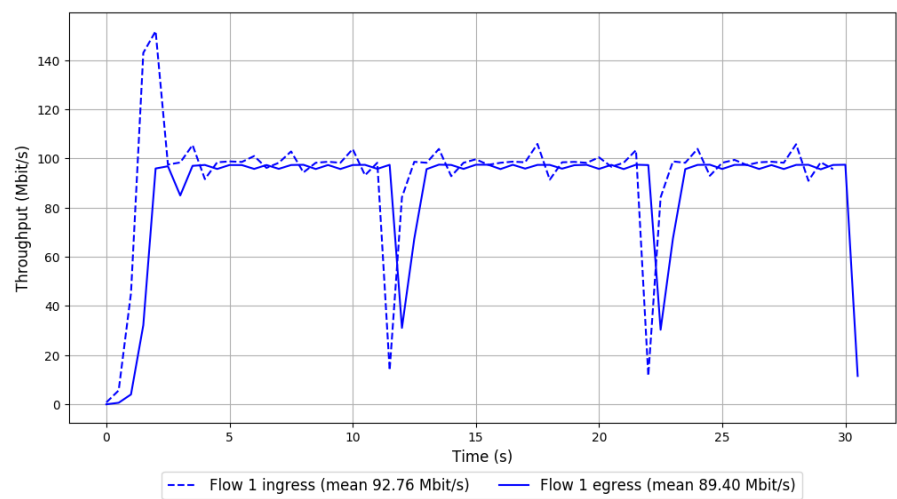
-- Flow 1:

Average throughput: 89.40 Mbit/s

95th percentile per-packet one-way delay: 111.835 ms

Loss rate: 3.62%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 04:50:37

End at: 2018-08-28 04:51:07

Local clock offset: 9.969 ms

Remote clock offset: 8.814 ms

Below is generated by plot.py at 2018-08-28 05:02:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.14 Mbit/s

95th percentile per-packet one-way delay: 116.715 ms

Loss rate: 0.45%

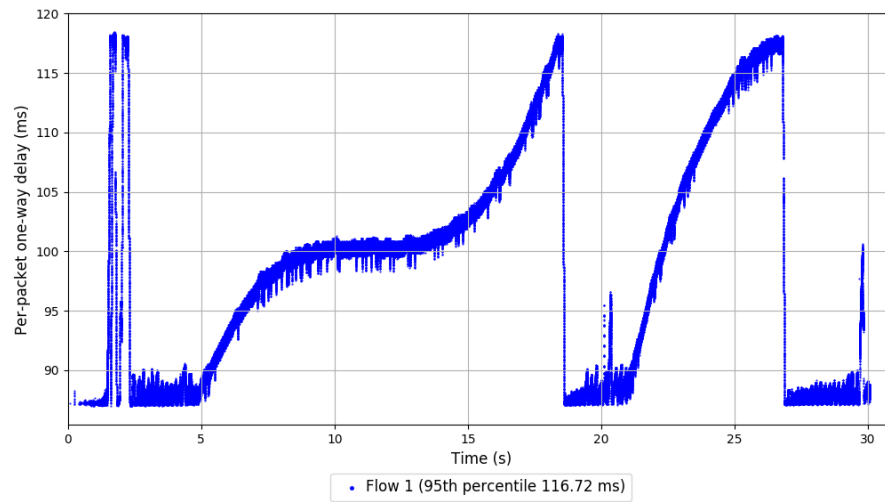
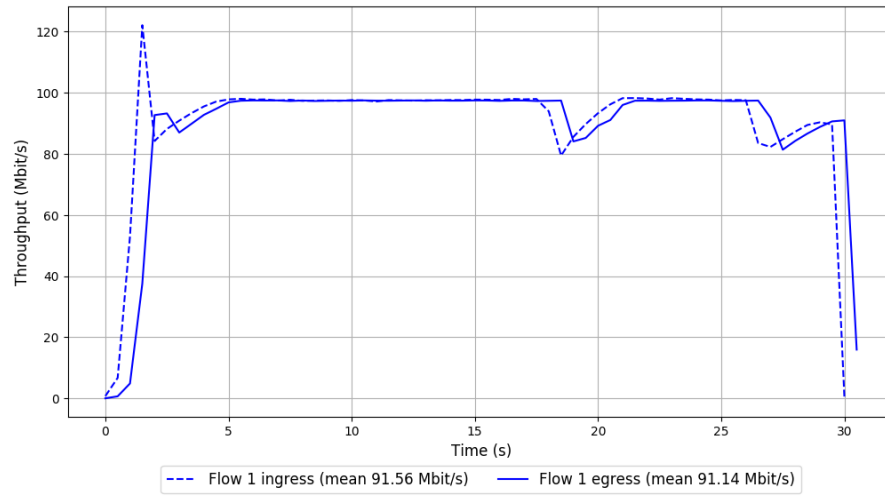
-- Flow 1:

Average throughput: 91.14 Mbit/s

95th percentile per-packet one-way delay: 116.715 ms

Loss rate: 0.45%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 04:55:17

End at: 2018-08-28 04:55:47

Local clock offset: 10.836 ms

Remote clock offset: 4.753 ms

Below is generated by plot.py at 2018-08-28 05:02:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.19 Mbit/s

95th percentile per-packet one-way delay: 115.059 ms

Loss rate: 0.45%

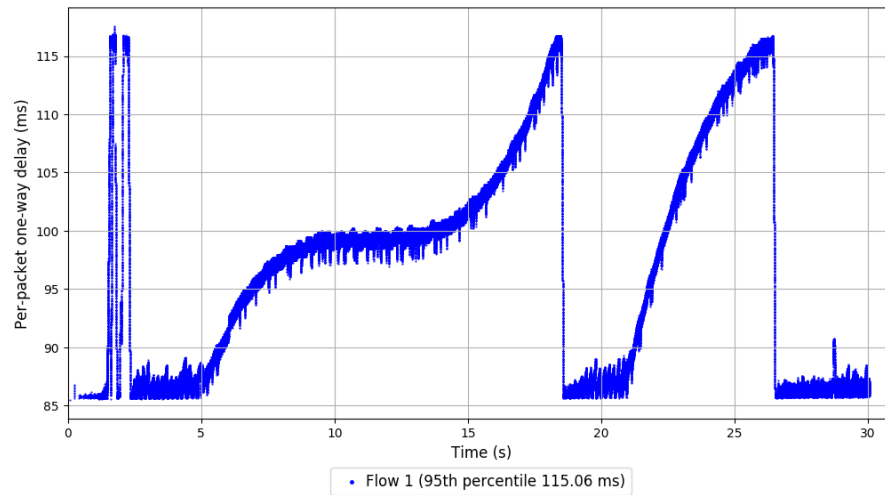
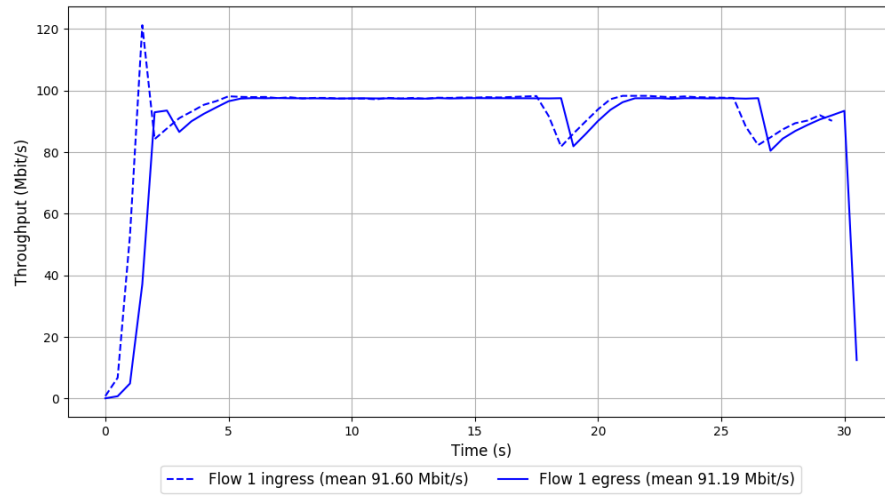
-- Flow 1:

Average throughput: 91.19 Mbit/s

95th percentile per-packet one-way delay: 115.059 ms

Loss rate: 0.45%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-08-28 04:59:58

End at: 2018-08-28 05:00:28

Local clock offset: 10.808 ms

Remote clock offset: 3.296 ms

Below is generated by plot.py at 2018-08-28 05:02:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.28 Mbit/s

95th percentile per-packet one-way delay: 111.994 ms

Loss rate: 0.43%

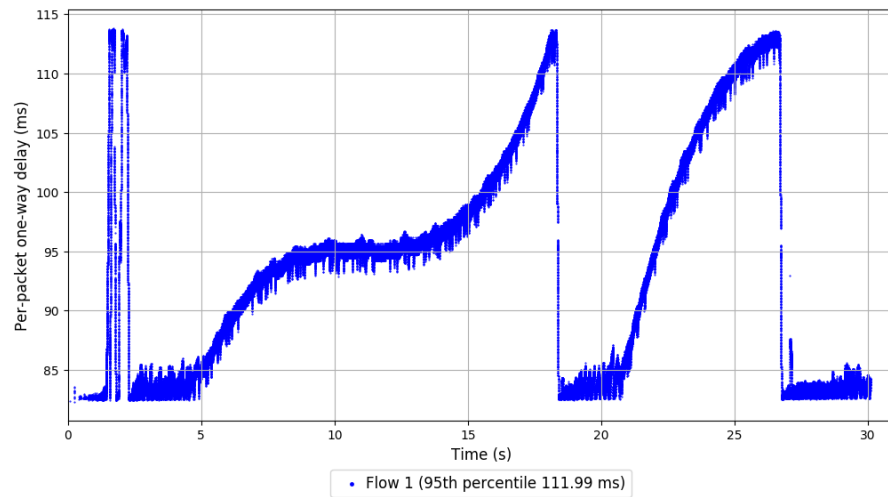
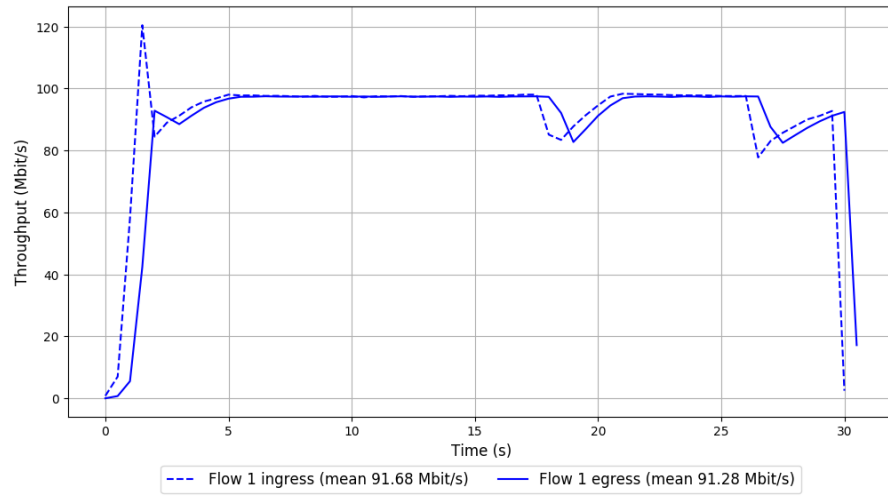
-- Flow 1:

Average throughput: 91.28 Mbit/s

95th percentile per-packet one-way delay: 111.994 ms

Loss rate: 0.43%

Run 3: Report of TCP Cubic — Data Link

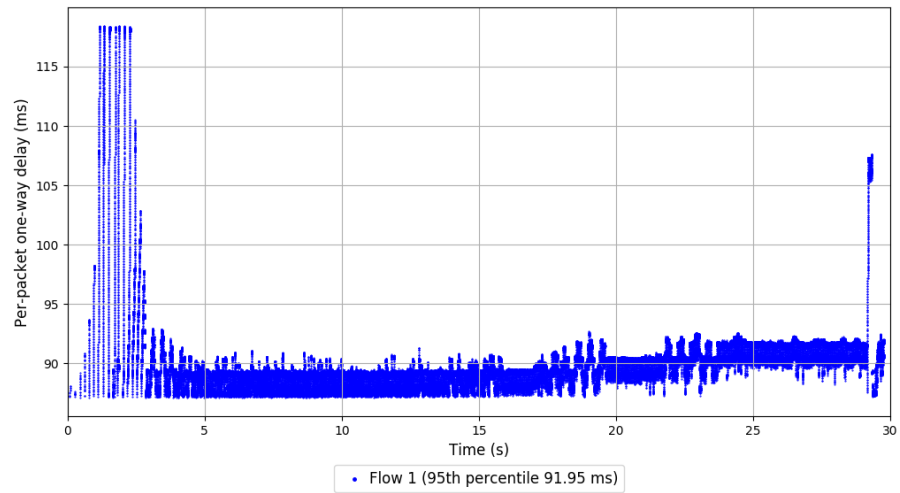
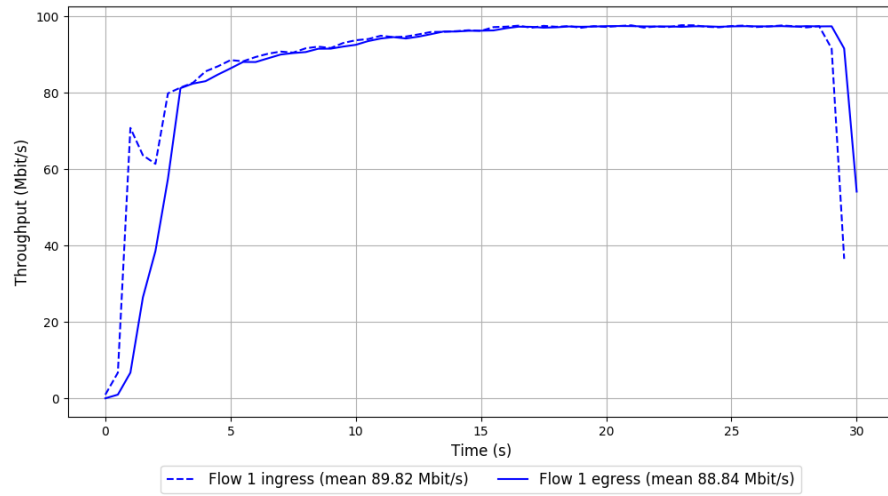


```
Run 1: Statistics of Indigo

Start at: 2018-08-28 04:48:14
End at: 2018-08-28 04:48:44
Local clock offset: 8.817 ms
Remote clock offset: 8.928 ms

# Below is generated by plot.py at 2018-08-28 05:02:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.84 Mbit/s
95th percentile per-packet one-way delay: 91.950 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 88.84 Mbit/s
95th percentile per-packet one-way delay: 91.950 ms
Loss rate: 1.08%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 04:52:54

End at: 2018-08-28 04:53:24

Local clock offset: 11.186 ms

Remote clock offset: 9.807 ms

Below is generated by plot.py at 2018-08-28 05:02:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 86.50 Mbit/s

95th percentile per-packet one-way delay: 98.487 ms

Loss rate: 2.26%

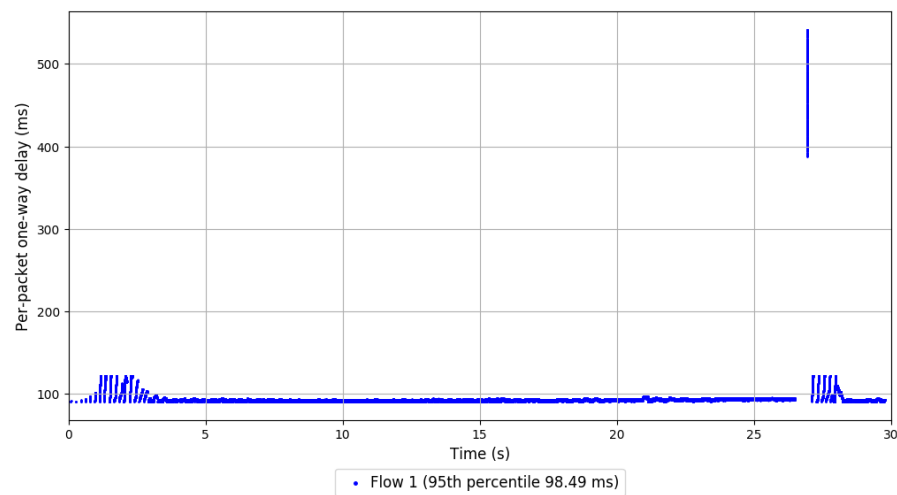
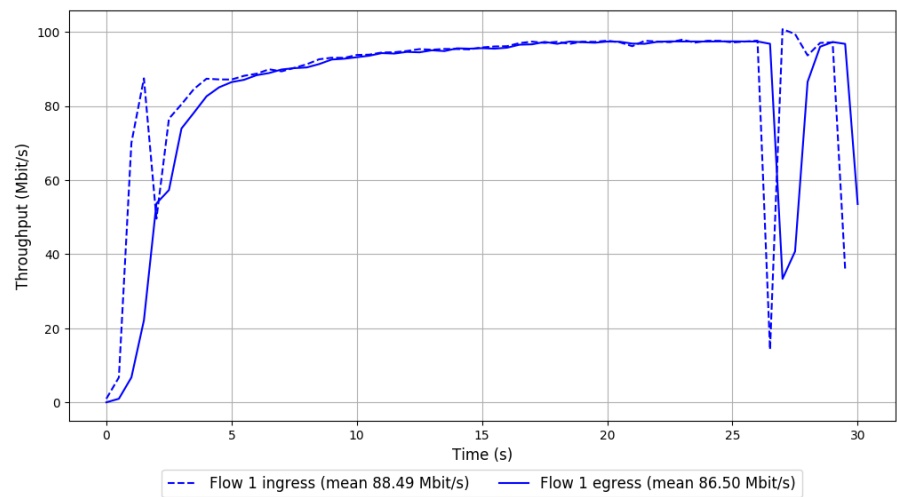
-- Flow 1:

Average throughput: 86.50 Mbit/s

95th percentile per-packet one-way delay: 98.487 ms

Loss rate: 2.26%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-08-28 04:57:35

End at: 2018-08-28 04:58:05

Local clock offset: 11.193 ms

Remote clock offset: 4.543 ms

Below is generated by plot.py at 2018-08-28 05:03:04

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.61 Mbit/s

95th percentile per-packet one-way delay: 93.034 ms

Loss rate: 1.21%

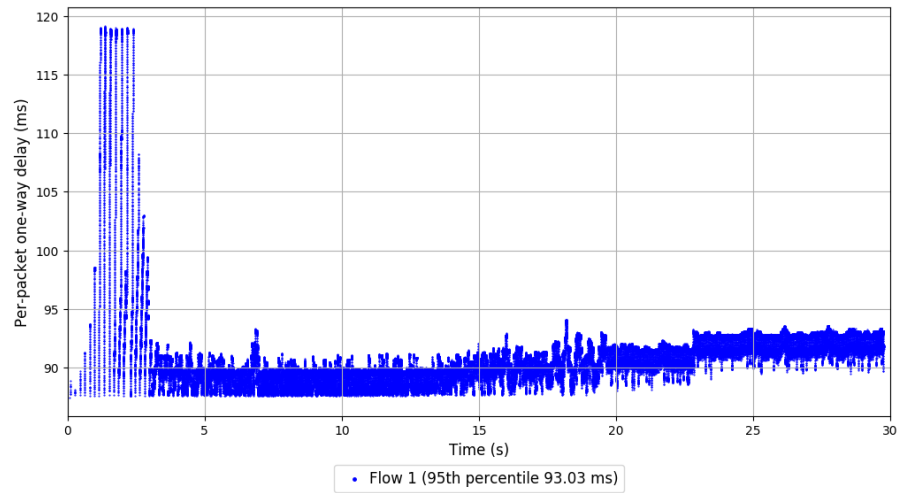
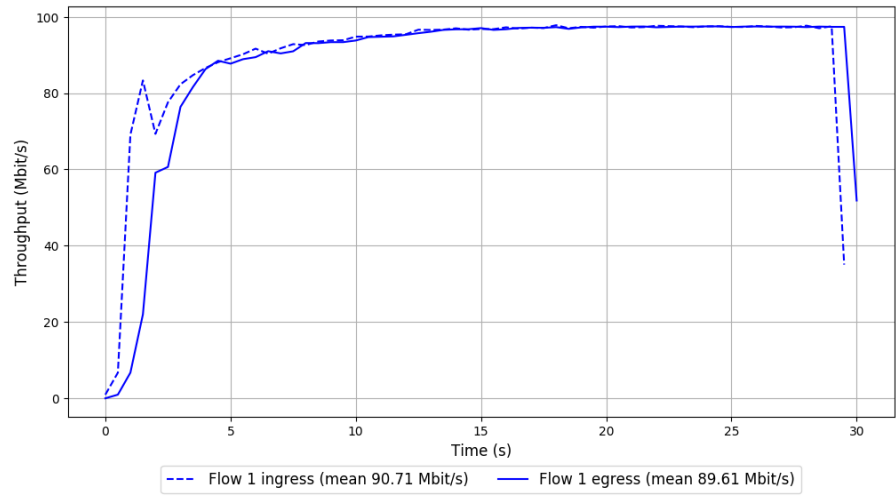
-- Flow 1:

Average throughput: 89.61 Mbit/s

95th percentile per-packet one-way delay: 93.034 ms

Loss rate: 1.21%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses

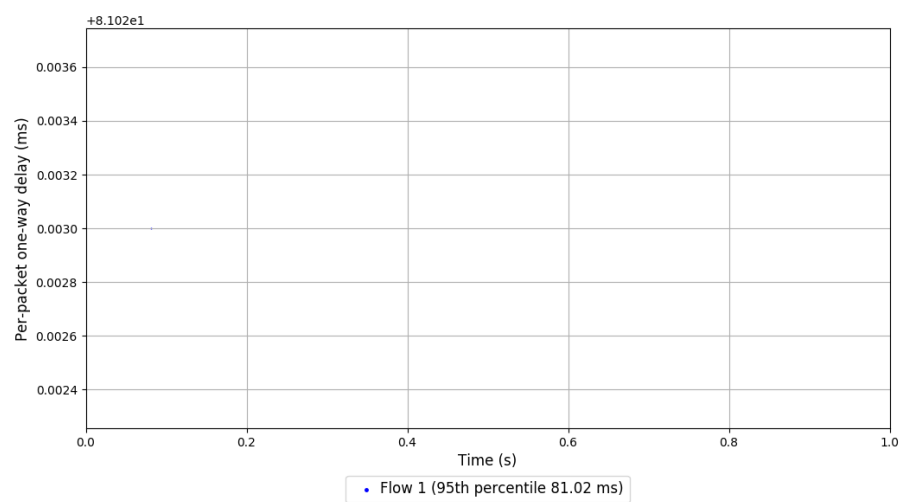
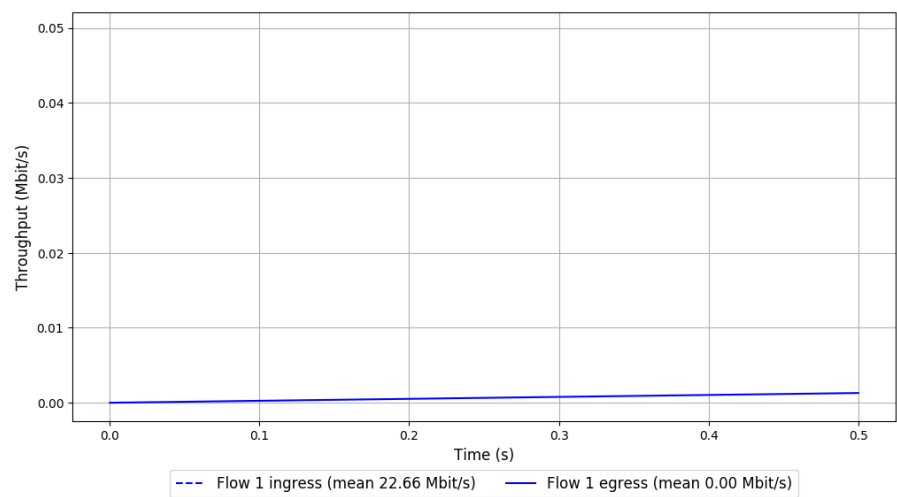
Start at: 2018-08-28 04:51:48

End at: 2018-08-28 04:52:18

Local clock offset: 10.206 ms

Remote clock offset: 4.884 ms

Run 1: Report of Muses — Data Link



Run 2: Statistics of Muses

Start at: 2018-08-28 04:56:28

End at: 2018-08-28 04:56:58

Local clock offset: 10.186 ms

Remote clock offset: 7.462 ms

Below is generated by plot.py at 2018-08-28 05:03:04

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.93 Mbit/s

95th percentile per-packet one-way delay: 98.971 ms

Loss rate: 68.68%

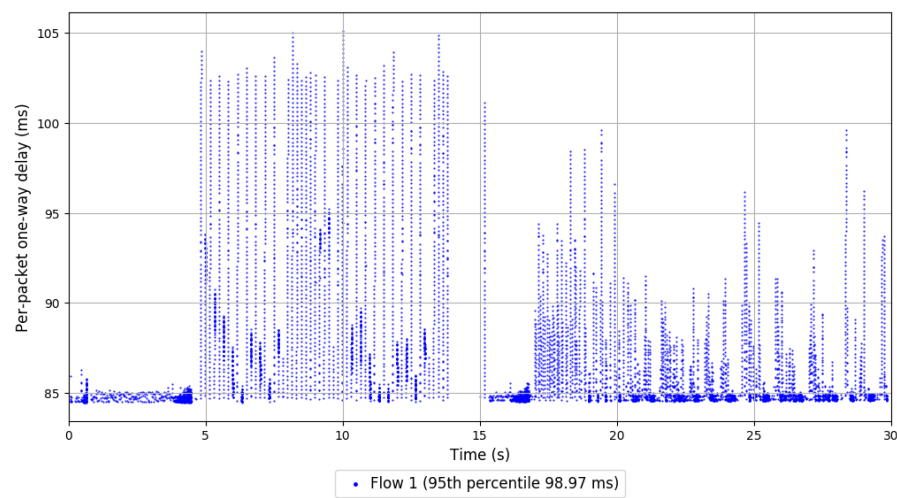
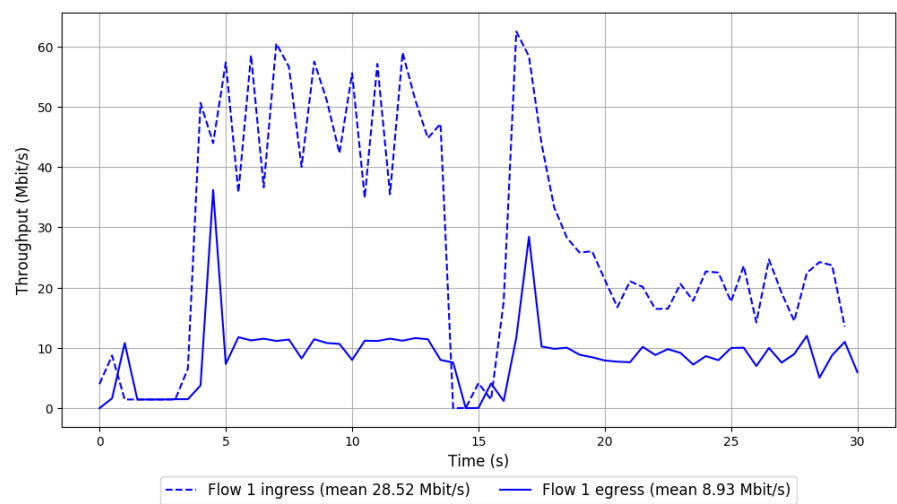
-- Flow 1:

Average throughput: 8.93 Mbit/s

95th percentile per-packet one-way delay: 98.971 ms

Loss rate: 68.68%

Run 2: Report of Muses — Data Link



Run 3: Statistics of Muses

Start at: 2018-08-28 05:01:09

End at: 2018-08-28 05:01:39

Local clock offset: 11.778 ms

Remote clock offset: 3.243 ms

Below is generated by plot.py at 2018-08-28 05:03:04

Datalink statistics

-- Total of 1 flow:

Average throughput: 8.58 Mbit/s

95th percentile per-packet one-way delay: 96.404 ms

Loss rate: 61.33%

-- Flow 1:

Average throughput: 8.58 Mbit/s

95th percentile per-packet one-way delay: 96.404 ms

Loss rate: 61.33%

Run 3: Report of Muses — Data Link

